

1 .1. A microprocessor interface, comprising:  
2 a semiconductor integrated circuit having  
3 formed therein:  
4 (i) a data rebuffering section adapted to  
5 couple data from a one of a plurality of data ports to a  
6 data port of the microprocessor selectively in accordance  
7 with a control signal; and  
8 (ii) a main memory interface adapted for  
9 coupling to a main memory for the microprocessor, such main  
10 memory interface being coupled to the data rebuffering  
11 section for providing control signals to the main memory  
12 section for enabling data transfer between the main memory  
13 and the microprocessor through the data rebuffering section.

1 2. The microprocessor interface recited in claim 1  
2 wherein the main memory is a selected one of a plurality of  
3 memory types each type having a different data transfer  
4 protocol and wherein the main memory interface is configured  
5 in accordance with the selected one of the plurality of  
6 memory types to provide a proper memory protocol to data  
7 being transferred between the microprocessor and the main  
8 memory through the main memory interface.

1 3. The microprocessor interface recited in claim 2  
2 wherein one main memory type is an SDRAM.

1 4. The microprocessor interface recited in claim 2  
2 wherein one main memory type is a RDRAM.

1 5. The microprocessor interface recited in claim 1  
2 including a second integrated circuit adapted for  
3 controlling the first- mention integrated circuit, such  
4 second integrated circuit having thereon a controller

5 adapted for coupling to the main memory interface, such  
6 controller being adapted to produce a main memory access  
7 control signal, and wherein:  
8 the main memory has a two portions of  
9 addressable locations, one portion being addressed by the  
10 main memory interface in response to a preselected range of  
11 memory location addresses provided by the microprocessor and  
12 the other portion being addressed by the main memory  
13 interface in response to the memory access control signal  
14 provided by (the controller.)

1 6. The microprocessor interface recited in claim 1  
2 wherein the data rebuffering section includes:

3 a selector responsive to the control signal for  
4 coupling data between a selected one of the data ports and  
5 the data port of the microprocessor.

1 7. The microprocessor interface recited in claim 1  
2 wherein the data rebuffering section includes:

3 a selector responsive to the control signal for  
4 coupling the data port of the microprocessor to either: a  
5 selected one of the data ports; or, the main memory,  
6 selectively in accordance with the control signal.

1 8. The microprocessor interface recited in claim 6  
2 wherein the data rebuffering section includes a data  
3 distribution unit having a plurality of ports each one of  
4 the ports being coupled to a corresponding one of:

- 5 (i) the selector;
- 6 (ii) a random access memory;
- 7 (iii) an interrupt request controller;
- 8 (iv) the microprocessor data port; and
- 9 (v) the main memory interface.

1           9. The microprocessor interface recited in claim 8  
2 wherein the main memory is a selected one of a plurality of  
3 memory types each type having a different data transfer  
4 protocol and wherein the main memory interface is configured  
5 in accordance with the selected one of the plurality of  
6 memory types to provide a proper memory protocol to data  
7 being transferred between the microprocessor and the main  
8 memory through the main memory interface.

1           10. The microprocessor interface recited in claim 9  
2 wherein one main memory type is an SDRAM.

1           11. The microprocessor interface recited in claim 9  
2 wherein one main memory type is a RDRAM.

1           12. The microprocessor interface recited in claim 9  
2 wherein the main memory interface comprises:  
3           a microprocessor/main memory interface control  
4 section adapted to provide control signals between such  
5 section and the microprocessor and between such section and  
6 the controller; and  
7           a main memory controller, such controller being  
8 configured in accordance with the selected one of the  
9 plurality of memory types to provide the proper memory  
10 protocol to data being transferred between the  
11 microprocessor and the main memory through the main memory  
12 interface.

1           13. The microprocessor interface recited in claim 9  
2 wherein the main memory interface comprises:  
3           a microprocessor/main memory interface control  
4 section adapted to provide control signals between such

5 section and the microprocessor and between such section and  
6 the controller; and  
7 a main memory controller, such controller being  
8 configured in accordance with a control signal provided  
9 thereto by the microprocessor to address a selected one of  
10 the plurality of potential memory capacities, the control  
11 signal supplied by the microprocessor indicating to the main  
12 memory controller the particular one of the plurality of  
13 potential memory capacities of the main memory.

1 14. The microprocessor interface recited in claim  
2 13 wherein the main memory interface comprises:  
3 a microprocessor/main memory interface control  
4 section adapted to provide control signals between such  
5 section and the microprocessor and between such section and  
6 the controller; and  
7 a main memory controller, such controller being  
8 configured in accordance with the selected one of the  
9 plurality of memory types to provide a proper memory  
10 protocol to data being transferred between the  
11 microprocessor and the main memory through the main memory  
12 interface.

1 15. The microprocessor interface recited in claim  
2 14 wherein one main memory type is an SDRAM.

1 16. The microprocessor interface recited in claim  
2 14 wherein one main memory type is a RDRAM.

1 17. The microprocessor interface recited in claim  
2 14 wherein the main memory interface includes an error  
3 correction and detection unit coupled between the  
4 distributor and the main memory controller.

1 18. The microprocessor interface recited in claim  
2 17 wherein the microprocessor is a Power PC microprocessor.

1 19. The microprocessor interface recited in claim 5  
2 including a mask to transform the address to an address in  
3 the second section of the memory.